

The abstract of Japanese patent application A 62/199218 of September 2, 1987, of Furukawa Electric Co. Ltd. (Nakamura et al) shows co-reduction of a tubular nickel-titanium shape memory alloy blank and stainless steel core using shape memory effect of the tube material (a rolled up, welded and thickness reduced sheet) to expand the tube to enable core removal. This is the opposite of the presently claimed invention wherein unique stable plastic elongation/area reduction deformation of the core, compared to an essentially unchanged tube, enables core removal.

It should be added that Furukawa Electric Co. is and has been for several years one of the world's leading suppliers of nickel-titanium alloys. Its failure to grasp the present invention is compelling evidence of unobviousness of the latter.

U.S. patent 5,056,209 granted in 1991 to Ohashi et al./Sumitomo Metal Industries ltd. discloses a method of co-extruding concentric metal tubes to form a clad bimetallic tubular end product. The materials involved are carbon steel tubing as an outer tube and harder to work materials having higher deformation resistance. There is no relationship to the presently claimed combination.

The claims herein have used the term "stable elongation" to define the unique elongation and area reduction of the core at claim step (sub-pars.) (2), (3) and now recite it for clarification as "elongation with uniform reduction of cross section in relation to the degree of elongation" and with "the elongation/reduction maintained when the stretching forces are withdrawn," and in (sub-par.) (1) selecting a core metal that enables such characteristics

The process claims also recite the elemental metals, alloys and compounds identified in the specification.

The combination of such unique stretching and materials solves a heretofore intractable problem, meets an important need in the real world and has generated substantial favorable response in the relevant technical and commercial communities and enjoyed commercial success.

The application of the present invention, as a whole, involves special considerations, e.g. as outlined at p. 9, ll. 4-29.

The skill of the art is such that the present invention if obvious, would have been realized long ago - given the availability of all materials used herein, the process step technologies and the Thomasson reference for well over twenty-five years.

All the foregoing remarks are common to the claimed subject matter of dependent claims 2-21 and parent claim 24. The further specific limitations of claims 2-21 are further asserted. It is specifically disputed that the additional limitations in combination with parent claim elements are obvious matters of design or the like.

The enclosed Rule 132 Declaration of John D. Harrison, one of the co-inventors, shows the industrial utilization of the present invention describing materials used and process steps consonant with the claims hereof, to make highly successful products.

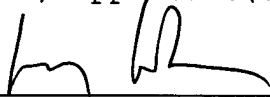
Allowance of claims 2-21 and 24 is requested. Applicants reserve the right to assert tapered tube subject matter (as in cancelled product claim 23 and related process steps and product claim 22) in one or more divisional applications.

If questions remain, please call Applicants' attorney, collect, at the number given above. Please charge any claims fees associated with this response to Deposit Account 03-2410, Order No. 6140.

Respectfully submitted,

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